

# What are you looking for?

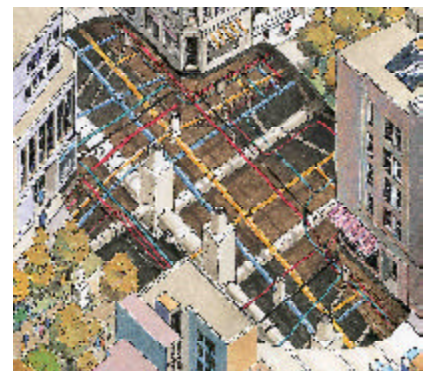
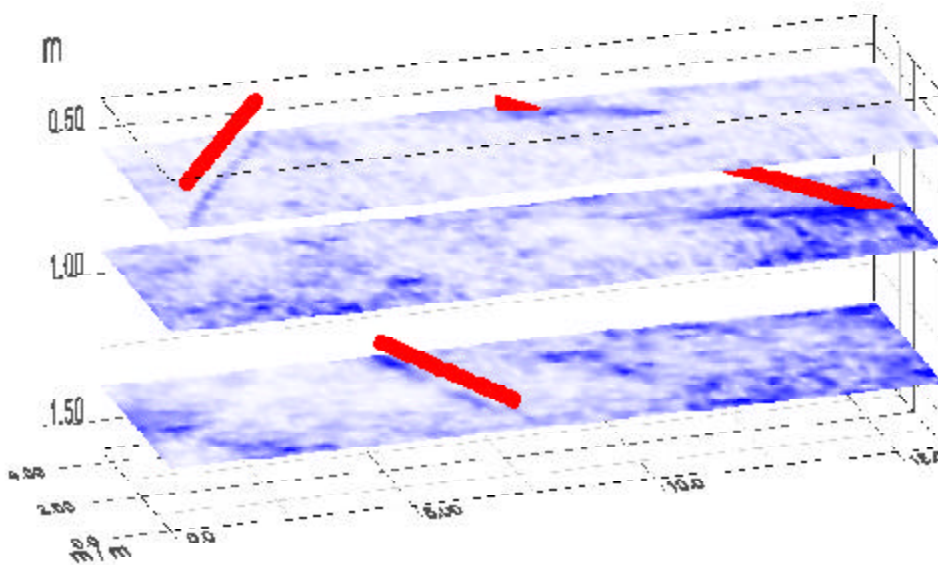
Ground Penetrating Radar (GPR) has such a wide range of uses that it is not always easy to describe. This brochure attempts to convey the variety of applications through pictures and data from actual surveys. These survey examples represent typical applications of GSSI equipment that occur *daily* around the world. GSSI customers, who are in the field working in a wide range of diverse conditions, supplied most of the data.

We have not shown those 'once in a decade,' or 'once in a lifetime' discoveries such as the Woolly Mammoth in Siberia or the discovery of an Incan village in Peru. We have not shown these because there are too many to list and several have been television specials, such as the Discovery Channel and National Geographic.

If there is one theme in all of these applications, it is public safety. Almost every application, directly or indirectly, touches the infrastructure that we all use and rely on for our daily life. The care and maintenance of that infrastructure - from initial site assessment surveys through the effective maintenance of aging structures - is important to us all.

## Utility Detection & Mapping

Knowledge of existing pipe locations prior to installing new pipes is essential.

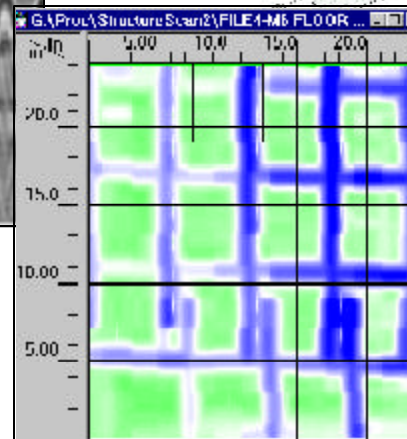
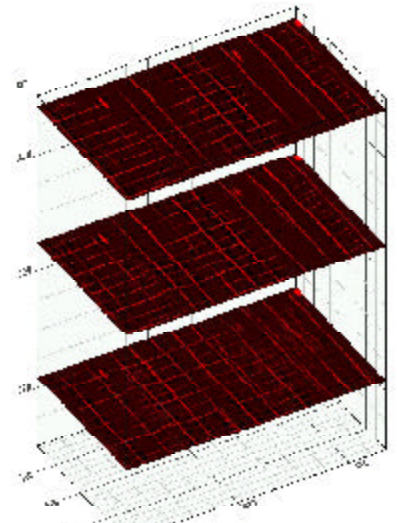
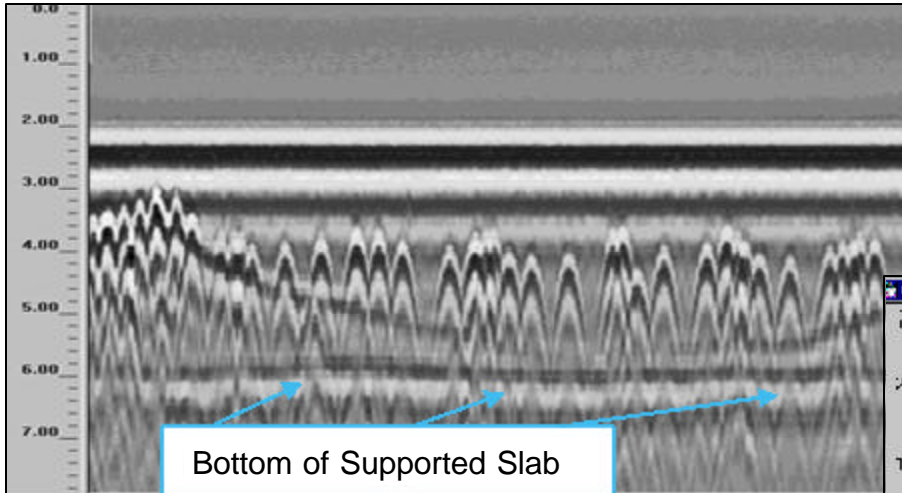


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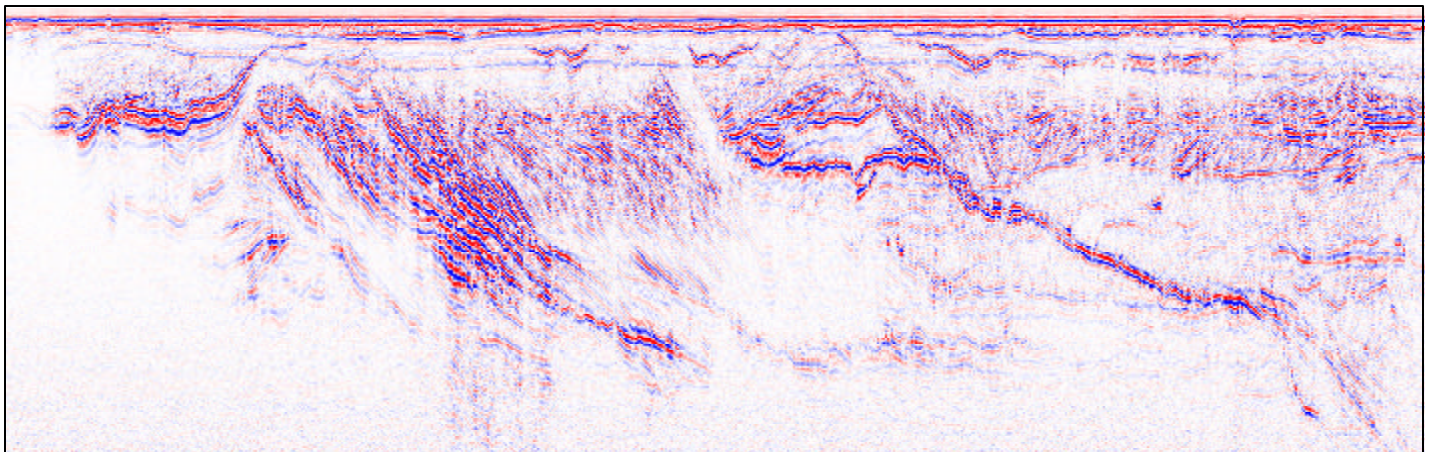
## Concrete Structures

“Look” into concrete before drilling, cutting or coring. View it the way you like in 3D.



## Geology and Geophysics

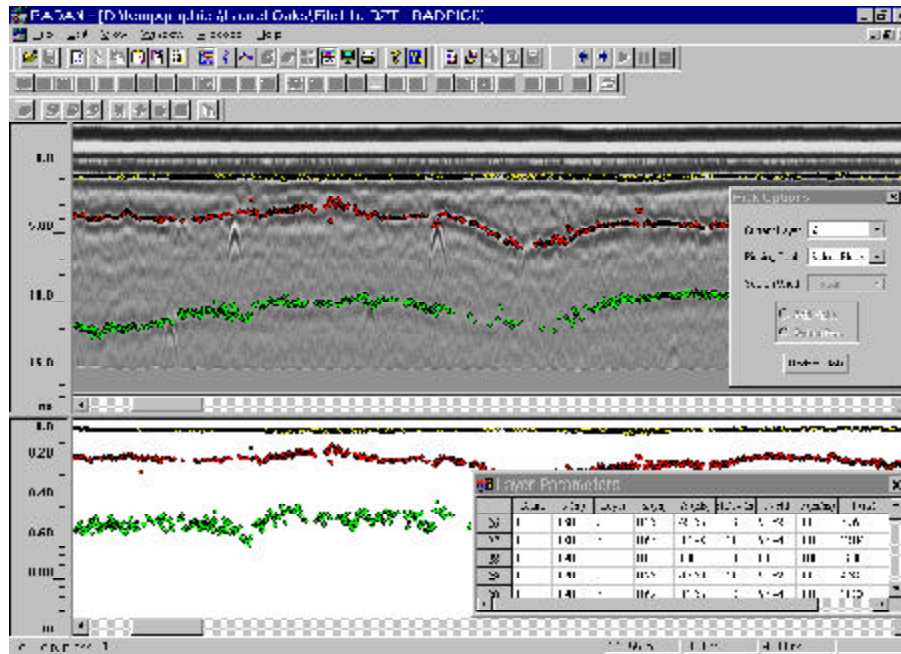
Stratigraphic survey of complex sedimentary sequences improves pre-construction engineering design decisions.





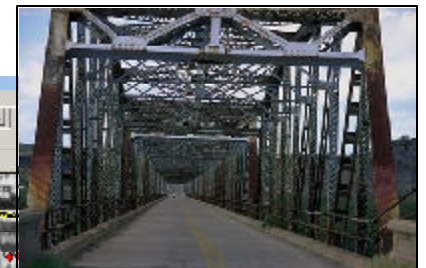
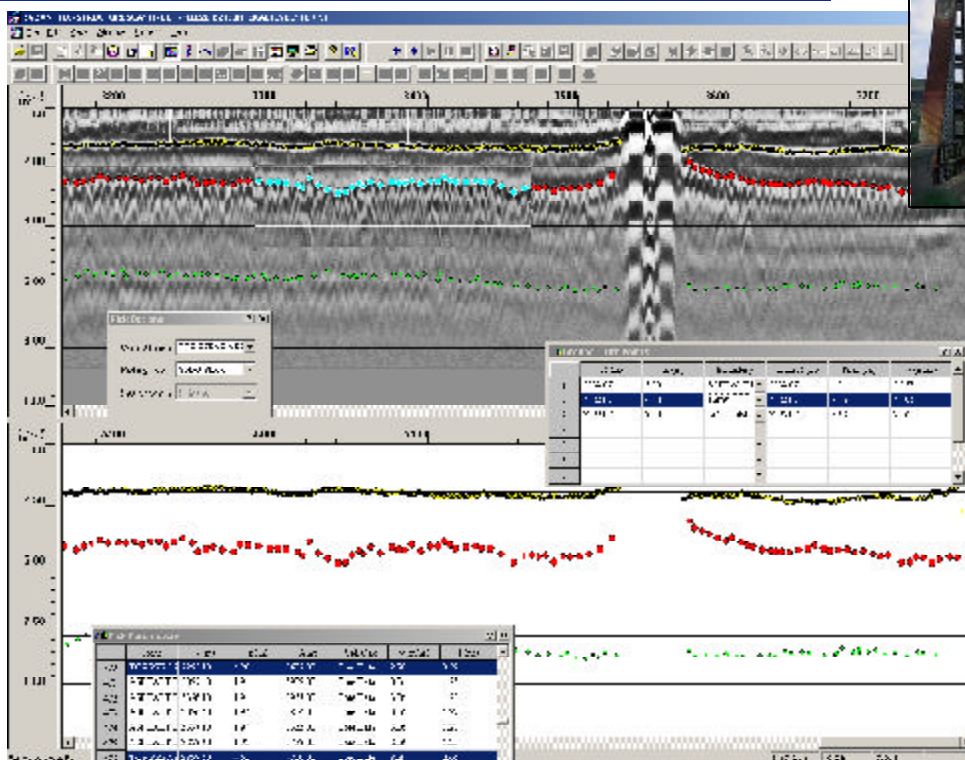
# Highway Inspection

Highway inspection showing pipes and automatic detection of layers, base and sub-base pinpoints locations requiring maintenance.



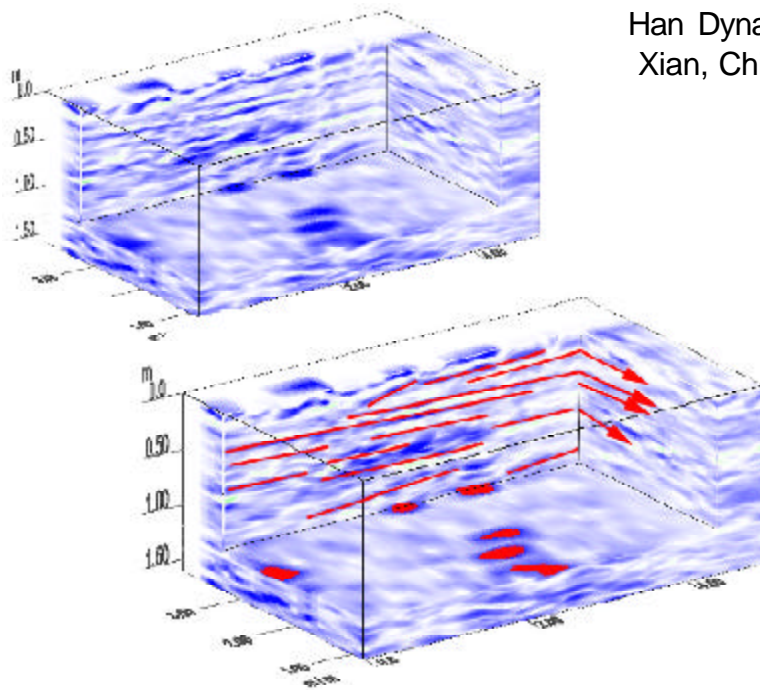
# Bridge Inspection

Quality control of bridges. Find rebar, concrete and asphalt cover thickness and areas of deterioration.



# Archeology

3D cube of GPR results showing rammed earth layers and buried features of unexcavated tomb.

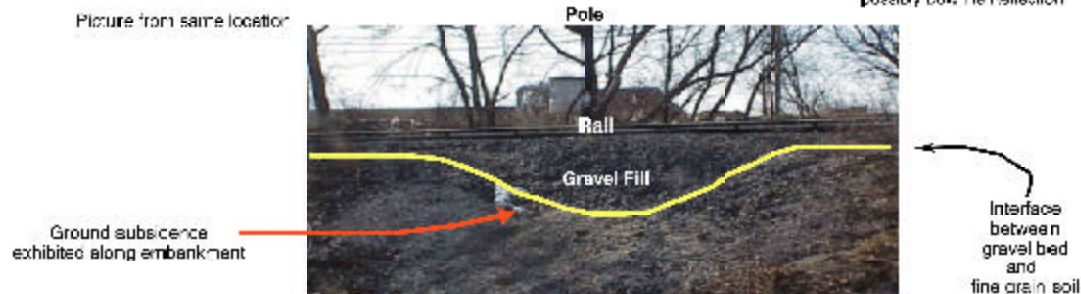
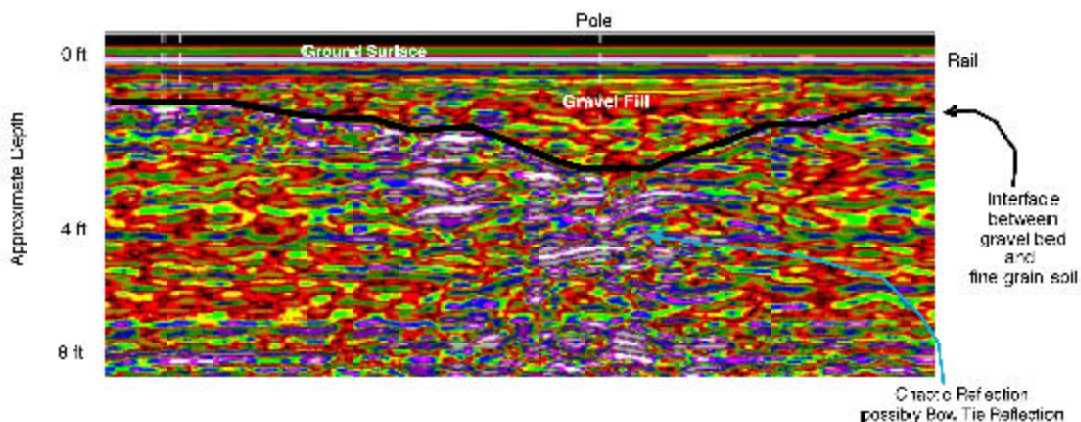


Han Dynasty Tomb  
Xian, China



# Railroad Bed Inspection

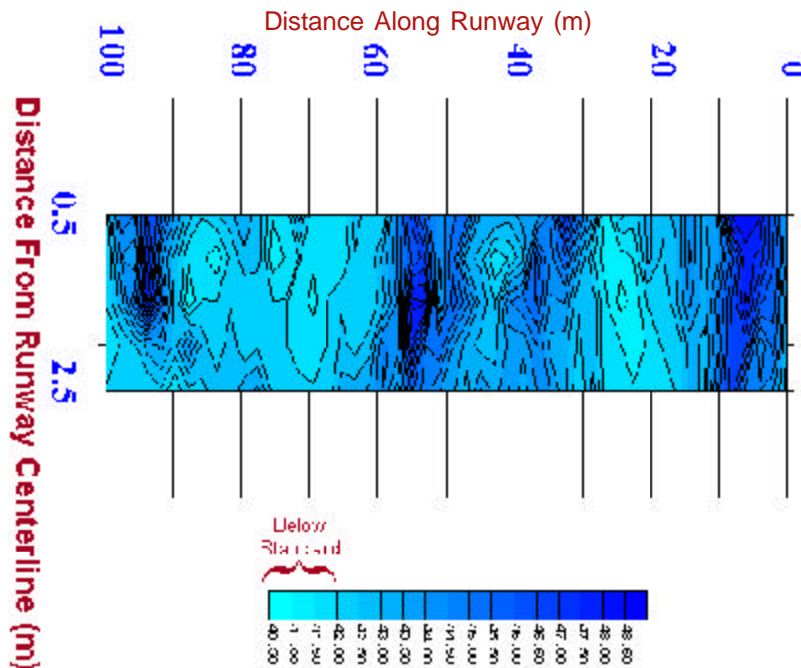
Map railroad ballast thickness and find leaking pipes to prevent accidents.



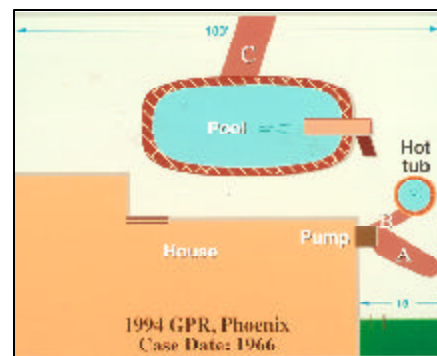
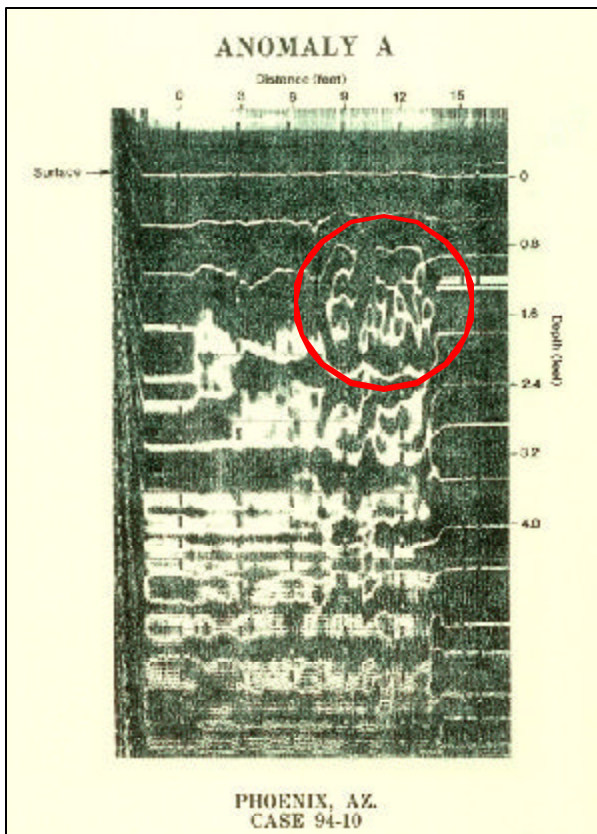


# Airport Inspection

Plan view of runway thickness (cm). Quality Assurance inspections and void detection to prevent the unexpected.



# Forensics



Map of crime scene and location of GPR anomalies.

Excavated remains of victim.



**Objective:** Locate suspected physical remains of murder victim beneath a concrete pool deck.

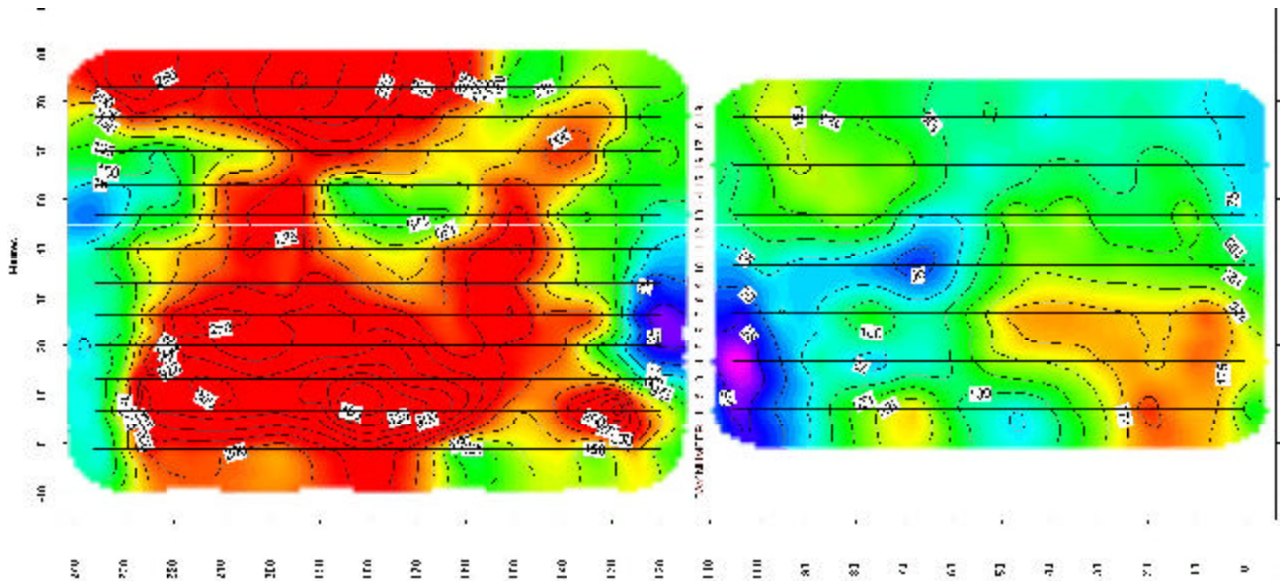
**Result:** Location of remains pinpointed using GPR technology. Prosecution resulted in First Degree murder conviction.

Graphic 2D GPR data collected in 1994.

Data and photos courtesy of Geoforensics International, Lakewood, CO USA

# Precision Farming

Conductivity map of a field to determine suitability as a vineyard.

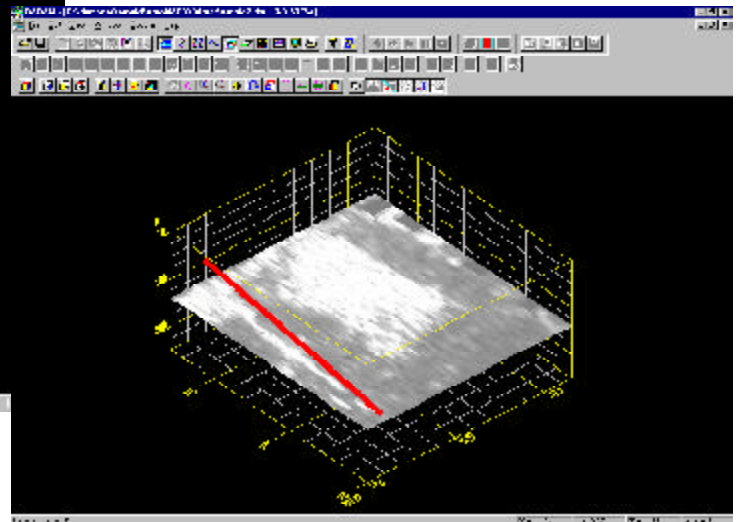
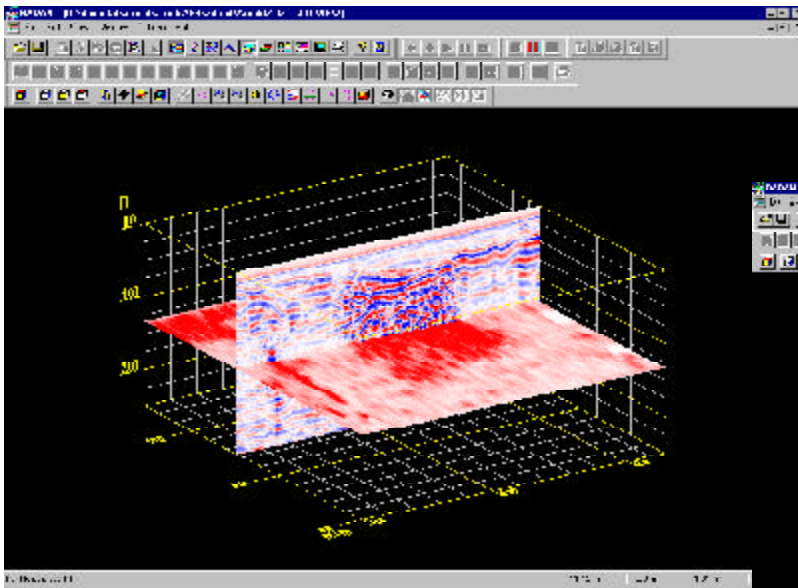


GEM-300 data, 19975 Hz  
Dardanup, Western Australia

*Data courtesy of Landline Geophysics,  
Perth, Western Australia.*

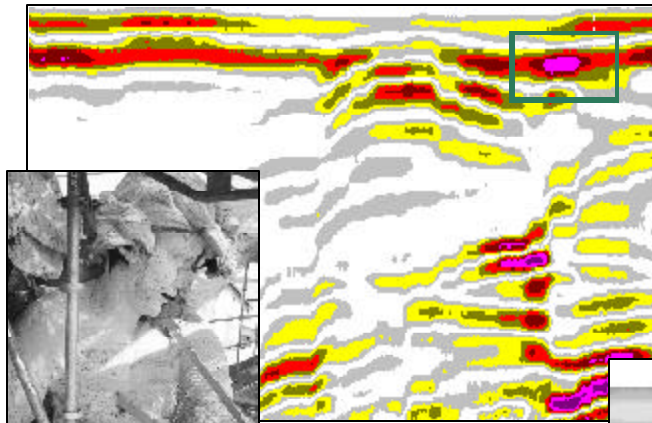
# Environmental

During GPR mapping of a dipping pipe, an adjacent unknown waste pit was found (red on the left, white on the right).





# Architectural Facade Inspection



Nail

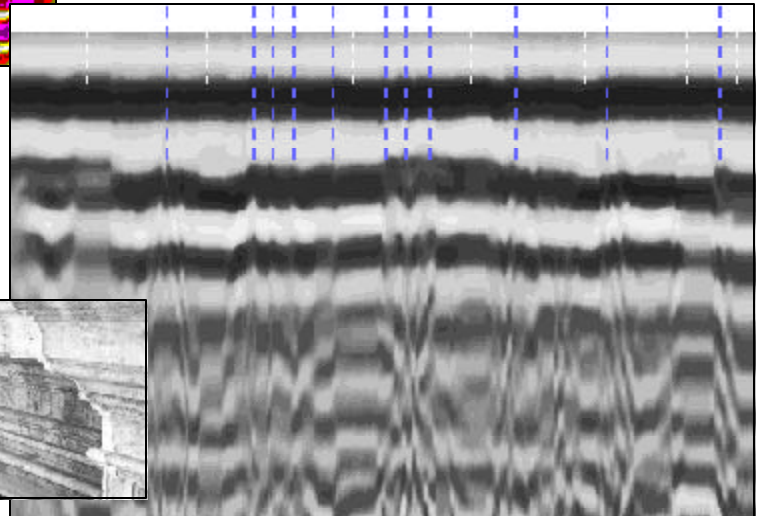


Angel with evidence of stuccoings and rebar.



St. Peter's Church, Rome, Italy

Fractures

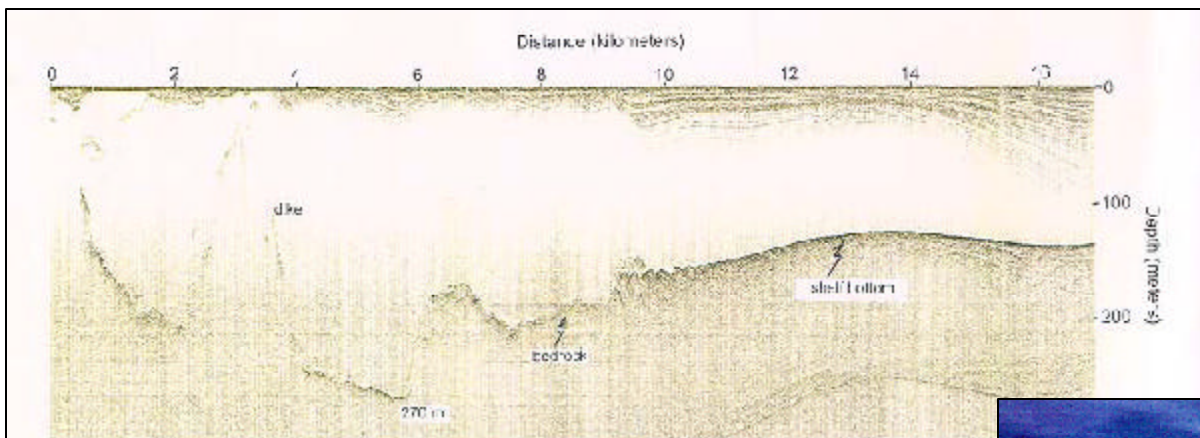


Frame above the bells with numerous fractures due to movement and stresses caused by the bells.



Data and photos courtesy of Codevintec, Milan, Italy

## Snow / Ice Thickness Measurements



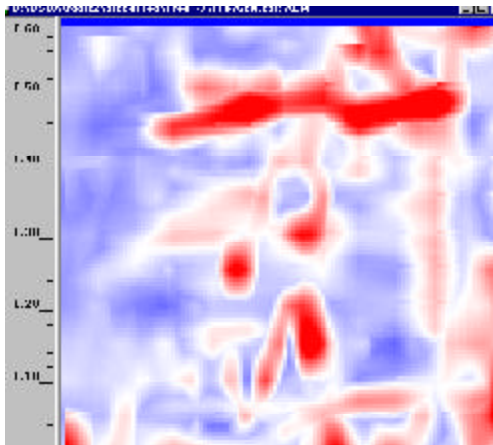
100 MHz radar profile recorded 6 Nov, 1995 in McMurdo Sound, Antarctica. A 4000 ns scan duration at 2048 samples/scan and 16-bits was used. The sharp feature at left is a radiating volcanic dike. On the right is a record of layers of volcanic ash and debris deposited by windstorms off Minna Bluff. The same equipment has been used every year since this first survey.



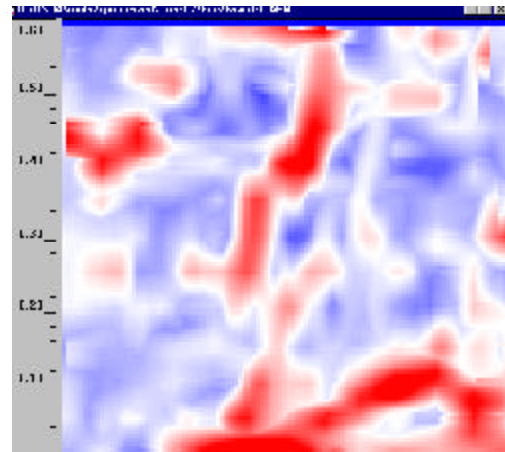
Data courtesy of USACE/CRREL, Hanover, NH USA

## University / Research

3D surveys of tree roots are being conducted to determine the effect of local conditions on growth and for use in biomass calculations.



Depth slice from 6-8 cm.

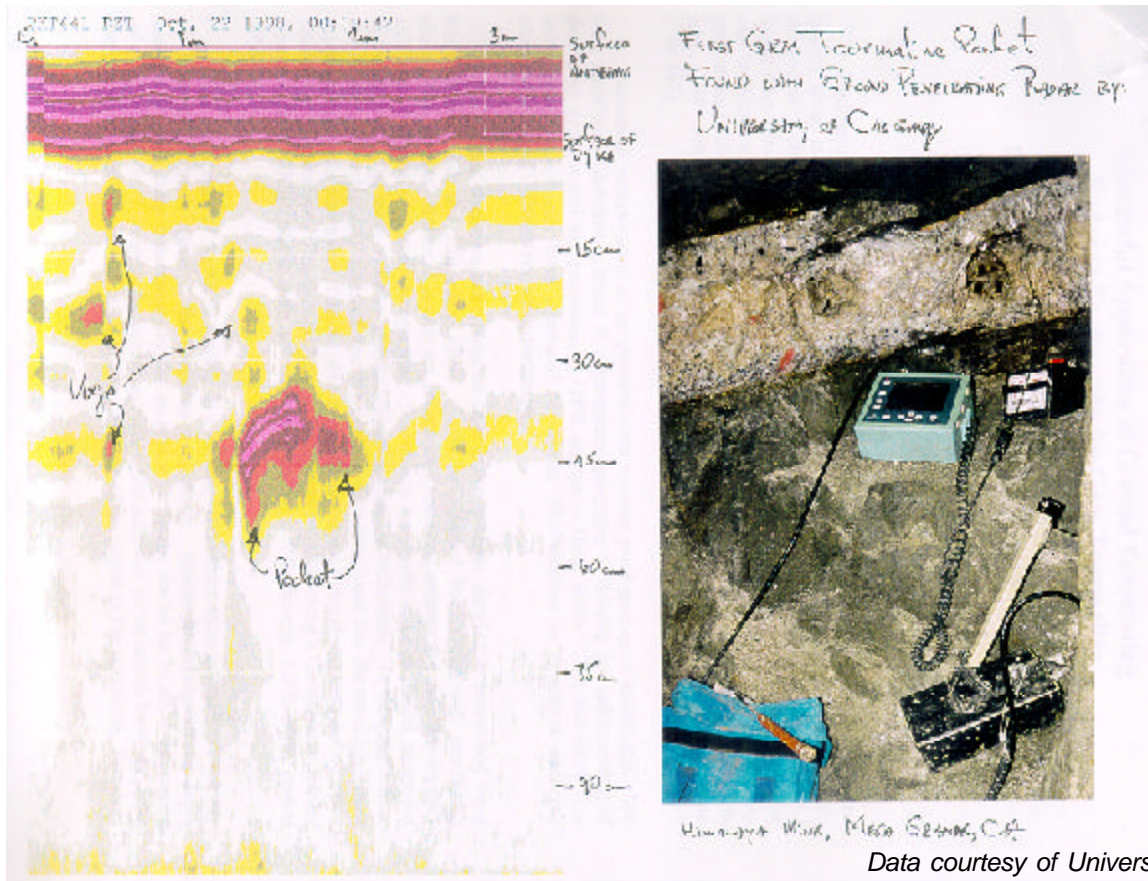


Depth slice from 10-12 cm.

Data courtesy of U.S.D.A.,  
Research Triangle Park, NC USA

## Detecting Minerals / Mining

Discovery of gem deposits. One vug yielded gem-quality tourmalines valued at over \$100,000.



Data courtesy of University of Calgary,  
Calgary, Alberta Canada